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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
QUARTERMAN, KEVIN J	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

Office Action Summary	Application No.	Applicant(s)	
	10/644,975	TSENG ET AL.	
	Examiner	Art Unit	
	Kevin Quarterman	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-31 and 34* is/are rejected.

7)☒ Claim(s) *1,3,4,30,32 and 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. The following title is suggested: --ORGANIC ELECTROLUMINESCENT DEVICE WITH A NANOSTRUCTURED RECOVERY LAYER--.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "stacked organic luminescent layers" of claim 7; the "first nanostructured organic electroluminescent recovery layer" on the first electrode between the first electrode and the organic luminescent layer of claim 32; and the "second nanostructured organic electroluminescent recovery layer" on the organic luminescent layer between the organic luminescent layer and the second electrode of claim 33 must ALL be shown or the features canceled from the claims. No new matter should be entered.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 1 and 30 are objected to because of the following informalities: Both, independent claims 1 and 30, recite the limitation "a second electrode on the organic luminescent layer, between the first electrode and the second electrode." This limitation reads as if the second electrode is between the first electrode and the second electrode. The claims do not clearly recite that it is the organic luminescent layer that is between the first electrode and second electrode. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, and 5-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Raychaudhuri (US Pub. 2004/0140758).

8. Regarding independent claim 1, Figure 3 of Raychaudhuri shows an organic electroluminescent device comprising a substrate (101); a first electrode (108) on the substrate; an organic luminescent layer (105) on the first electrode; a second electrode (107) on the organic luminescent layer, between the first electrode and the second electrode; and a nanostructured organic electroluminescent recovery layer (109). The Examiner notes that Raychaudhuri does not use applicant's nomenclature of a "nanostructured organic electroluminescent recovery layer" but instead refers to layer 109 as a "transmissive enhancement layer" having a thickness of 20-150nm. Since Raychaudhuri discloses the layer being made of the same material as disclosed by applicant, the Examiner notes that applicant's nanostructured organic electroluminescent recovery layer and Raychaudhuri's transmissive enhancement layer only differs by name.

9. Regarding claim 2, Figure 3 of Raychaudhuri shows the nanostructured organic electroluminescent recovery layer (109) on the substrate between the substrate (101) and the first electrode (108).

10. Regarding claim 5, Figure 5 of Raychaudhuri shows the nanostructured organic electroluminescent recovery layer (109x) on the second electrode (107x).

11. Regarding claim 6, Figure 5 of Raychaudhuri shows the organic luminescent layer comprising a single organic luminescent layer (105).

12. Regarding claim 7, Figure 5 of Raychaudhuri shows the organic luminescent layer comprising stacked organic luminescent layers (103, 104, 105, 106).

13. Regarding claim 8, Raychaudhuri discloses the organic luminescent layer comprising fluorescent luminescent material or phosphorescent luminescent material (pg. 4, ¶ [0064]).

14. Regarding claim 9, Raychaudhuri discloses the organic luminescent layer comprising molecular organic luminescent material (pg. 4, ¶ [0062-0064]).

15. Regarding claim 10, Raychaudhuri discloses the organic luminescent layer comprising polymer organic luminescent material (pg. 4, ¶ [0062-0064]).

16. Regarding claim 11, Raychaudhuri discloses the substrate being transparent or opaque glass or plastic (pg. 3, ¶ [0043]).

17. Regarding claim 12, Raychaudhuri discloses the substrate being transparent glass (pg. 3, ¶ [0043]). The Examiner notes that even though claim 12, which depends upon claim 11, lists particular materials for a plastic substrate, claim 11 requires the substrate to be glass or plastic.

18. Regarding claim 13, Raychaudhuri discloses the first electrode (108) being transparent, metal, or complex (pg. 4, ¶ [0067]).

19. Regarding claim 14, Raychaudhuri discloses the second electrode (107) being transparent, metal, or complex (pg. 4, ¶ [0066]).

20. Regarding claim 15, Raychaudhuri discloses the transparent electrode being ITO, IZO, AZO or ZnO (pg. 3, ¶ [0044]).

21. Regarding claim 16, Raychaudhuri discloses the transparent electrode being ITO, IZO, AZO or ZnO (pg. 3, ¶ [0044]).

22. Regarding claim 17, Raychaudhuri discloses the metal electrode being selected from the group consisting of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt, and alloys thereof (pg. 4, ¶ [0067]).

23. Regarding claim 18, Raychaudhuri discloses the metal electrode being selected from the group consisting of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt, and alloys thereof (pg. 4, ¶ [0066]).

24. Regarding claim 19, Raychaudhuri discloses the complex electrode comprising stacked layer electrodes of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt, ITO, IZO, AZO or ZnO (pg. 3, ¶ [0044-0045]).

25. Regarding claim 20, Raychaudhuri discloses the complex electrode comprising stacked layer electrodes of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt, ITO, IZO, AZO or ZnO (pg. 3, ¶ [0065-0066]).

26. Regarding claim 21, Raychaudhuri discloses the nanostructured organic electroluminescent recovery layer being a nanostructured thin film layer comprising dielectric material and nanoscale metal particles (pg. 4, ¶ [0068]).

27. Regarding claim 22, Raychaudhuri discloses the dielectric material for the nanostructured organic electroluminescent recovery layer being selected from the group consisting of silicides, oxides, carbides, nitrides, and combinations thereof (pg. 4, ¶ [0068]).

28. Regarding claim 23, Raychaudhuri discloses the dielectric material for the nanostructured organic electroluminescent recovery layer being selected from the group consisting of silicon oxide, aluminum oxide, magnesium oxide, silicon nitride, aluminum nitride, and magnesium fluoride (pg. 4, ¶ [0068]).

29. Regarding claim 24, Raychaudhuri discloses the nanoscale metal particles being selected from the group consisting of Au, Ag, Al, Ge, Se, Sn, Sb, Te, Ga, or combinations thereof (pg. 4, ¶ [0068]).

30. Regarding claim 25, Raychaudhuri discloses the nanoscale metal particles doped into the dielectric material (pg. 4, ¶ [0068]). The Examiner notes that the method of forming the nanostructured organic electroluminescent recovery layer is not germane to the patentability of the device itself (MPEP § 2113).

31. Regarding claim 26, Raychaudhuri discloses the nanostructured organic electroluminescent recovery layer comprising organic material and nanoscale metal particles (pg. 4, ¶ [0068]).

32. Regarding claim 27, Raychaudhuri discloses the organic material of the nanostructured organic electroluminescent recovery layer comprising molecular or polymer organic material (pg. 4, ¶ [0068]).

33. Regarding claim 28, Raychaudhuri discloses the nanoscale metal particles being selected from the group consisting of Au, Ag, Al, Ge, Se, Sn, Te, Ga, and combinations thereof (pg. 4, ¶ [0068]).

34. Regarding claim 29, Raychaudhuri discloses the nanoscale metal particles doped into the organic material (pg. 4, ¶ [0068]). The Examiner notes that the method

of forming the nanostructured organic electroluminescent recovery layer is not germane to the patentability of the device itself (MPEP § 2113).

Claim Rejections - 35 USC § 103

35. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

36. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

37. Claims 30, 31, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raychaudhuri (US Pub. 2004/0140758).

38. Regarding independent claim 30, Figure 3 of Raychaudhuri shows an organic electroluminescent device comprising a substrate (101); a first electrode (108) on the substrate; an organic luminescent layer (105) on the first electrode; a second electrode

(107) on the organic luminescent layer between the first electrode and the second electrode; a first nanostructured organic electroluminescent recovery layer (109).

39. Figure 4 of Raychaudhuri teaches the claimed limitations of independent claim 30, as discussed earlier, but fails to exemplify a second nanostructured organic electroluminescent recovery layer.

40. However, Figure 5 of Raychaudhuri shows a nanostructured organic electroluminescent recovery layer (109x) provided on the second electrode (107x) for enhancing transmission in a top-emitting organic light-emitting device.

41. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the organic electroluminescent device shown in Figure 3 of Raychaudhuri with the additional nanostructured organic electroluminescent recovery layer shown in Figure 5 of Raychaudhuri for enhancing transmission, since the mere duplication of parts has no patentable significance unless a new and unexpected result is produced (MPEP § 2144.04 VI-B).

42. Regarding claim 31, Figure 3 of Raychaudhuri shows the first nanostructured organic electroluminescent recovery layer (109) on the substrate (101) and between the substrate and the first electrode (108).

43. Regarding claim 34, Figure 5 of Raychaudhuri shows a second nanostructured organic electroluminescent recovery layer (109x) on the second electrode (107x).

Allowable Subject Matter

44. Claims 3-4 and 32-33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

45. The following is a statement of reasons for the indication of allowable subject matter: Regarding claims 3 and 32, the prior art of record neither shows or suggests an organic electroluminescent device comprising, in addition to other limitations of the claim, the nanostructured organic electroluminescent recovery layer on the first electrode between the first electrode and the organic luminescent layer.

46. Regarding claims 4 and 33, the prior art of record neither shows or suggests an organic electroluminescent device comprising, in addition to other limitations of the claim, the nanostructured organic electroluminescent recovery layer on the organic luminescent layer between the organic luminescent layer and the second electrode.

Conclusion

47. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McCormick (US 6,593,690) discloses organic electronic devices with conducting polymer buffer layers. Tamura (US 5,858,564) discloses organic electroluminescent devices with particular luminescent materials. Suzuki (US 6,198,217) discloses organic electroluminescent device with protective covering of organic and inorganic layers.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Quarterman
Examiner
Art Unit 2879

kq
16 April 2005